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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,340	12/04/2001	Masanobu Nishimine	0171-0801P-SP	9766

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EXAMINER

NGUYEN, NGOC YEN M

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 10/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/000,340

Applicant(s)

NISHIMINE ET AL.

Examiner

Ngoc-Yen M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is required that the burner has a plurality of concentric tubes, however, it is only required that the mixture of the reactants is fed into the center tube. It is unclear what is the purpose for the remaining tube(s).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 10 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rohr et al (5,340,560).

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Rohr discloses a fumed silica having a surface area of $132 \text{ m}^2/\text{g}$ and a standard deviation of 0.25 and a second fumed silica with surface area of $154 \text{ m}^2/\text{g}$ and a standard deviation of 0.43 (note sample A, B, respectively in Table I and column 4, lines 10-12).

The fumed silica of Rohr '560 anticipates the claimed product.

Alternatively, any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicant to establish that their product is patentably distinct not the examiner to show that the same process of making, see *In re Brown*, 173 U.S.P.Q 685, and *In re Fessmann*, 180 U.S.P.Q. 324.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohr '560, optionally further in view of Nishimine et al (5,855,860).

Rohr '560 discloses a method for making fumed silica having a surface area in the range of $75\text{-}500 \text{ m}^2/\text{g}$, which comprises feeding into a combustion chamber, quench air and a gaseous combustible mixture, where the gaseous combustible mixture comprises a mixture of a silicon compound selected from the group consisting of a silane, organosilane, and a mixtures thereof, and a mixtures of elements selected from the group consisting of:

a) oxygen and hydrogen, and

b) oxygen, hydrogen and nitrogen, and there is present in the gaseous combustible mixture from about 0.05 to about 2.5 mole% of the silicon compound based on the total moles in the gaseous combustible mixture and sufficient oxygen in the gaseous combustible mixture to produce a flame in the combustion chamber having calculated adiabatic flame temperature in the range of about 1400-2000°C combusting said gaseous combustible mixture at an adiabatic temperature of about 1400-2000°C to produce said fumed silica, and recovered said fumed silica (note claim 1).

The silicon compound used in the gaseous combustible mixture can be methyltrichlorosilane (note claim 2). From Table II, the mole ratio of the hydrogen, i.e. the flammable gas to the methyltrichlorosilane can vary from $(3.59/6.65 =) 0.54$ to $(22.9/0.76 =) 30.13$. This range overlaps the claimed range of " $\frac{1}{2}$ to 9". The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

Since the ratio of hydrogen to the methyltrichlorosilane in Rohr '560 overlaps the claimed range, the amount of water vapor resulting from the combustion of hydrogen in Rohr '560 would also overlap the claimed range because the amount of water formed is directly proportion to the amount of hydrogen used.

Rohr '560 further discloses an annular guard flame was maintained by feeding hydrogen in a concentric ring around the inner burner tube. Quench air was introduced approximately 20 cm upstream of the burner tip (note column 3, lines 38-42). The use

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of additional concentric ring(s) or tube(s) would have been obvious to one of ordinary skill in the art to maintain the desired condition of the flame for the process of producing fumed silica.

Optionally, Nishimine '860 can be applied to teach that in a process of producing silica by flame hydrolysis of an organosilane, well-known burners may be used for burning the reactants, for examples, simple triple or quadruple tube burners may be used. The preferable burner is a quadruple tube burner (note column 3, lines 45-60).

The difference is Rohr '560 does not specifically disclose the linear velocity of the gas mixture in the center tube.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to optimize such velocity in the process of Rohr '560 through routine experimentation to obtain the desired fumed silica product. It should be noted that Rohr '560, fumed silica with high surface area and low standard deviation is desired just as in the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (703) 308-2536. The examiner can normally be reached on Part time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (703) 308-3837. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1754

nmn
September 30, 2003